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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,988	10/31/2003	Brian M. Sager	NSL-014	8858

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EXAMINER	
PATTERSON, MARC A	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/698,988	SAGER ET AL.	
	Examiner	Art Unit	
	Marc A. Patterson	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

WITHDRAWN OBJECTIONS

1. The objection to the specification, of record on page 2 of the previous Action, is withdrawn.

WITHDRAWN REJECTIONS

2. The 35 U.S.C. first paragraph rejection of Claims 25 – 26, of record on page 2 of the previous Action, is withdrawn.

NEW OBJECTIONS

Claim Objections

3. Claim 30 is objected to because of the following informalities: The phrase 'the underlying substrate' has insufficient antecedent basis. Appropriate correction is required.

NEW REJECTIONS

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 12 – 14, 20 – 21, 23 – 25 and 27 – 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiao (U.S. Patent No. 6,472,467 B1).

With regard to Claims 12, 14, 25 and 27 – 29, Chiao discloses a laminate film having multiple layers (multilayer sequential coating, therefore comprising multiple layers or lamellae; column 6, lines 26 – 31) wherein the adjacent layers of the film are covalently bonded to each other (the layers of the coating comprise crosslinker, therefore Chiao discloses simultaneous crosslinking of the multiple layers, and therefore discloses covalent bonding of the layers, because crosslinking occurs by chemical reaction; column 6, lines 26 – 31); the layers of the film comprise polymer (the layers are crosslinked, as discussed above) which is organic (the crosslinkable component is acrylate, therefore a non – fluorinated acrylate precursor; column 3, lines 44 – 47) and inorganic particles having a size of 5 nanometers (therefore a thickness of 5 nanometers; column 4, lines 25 – 27) and each layer is therefore an organic layer and an inorganic layer, each layer is also a barrier (column 8, lines 47 – 48) and the film is therefore an inorganic/organic hybrid nanolaminate barrier film having a plurality of layers in which layers of organic polymer material alternates with layers of inorganic material.

With regard to Claim 13, as stated above, Chiao discloses a laminate of the film, and therefore disclose a laminate which includes at least two layers of the film; Chiao therefore discloses a laminate having between 100 and 1000 layers.

With regard to Claims 20 – 21, the layers disclosed by Chiao comprise crosslinked organosilane (column 5, lines 40 – 42; column 7, lines 38 – 43) and therefore comprise layers made from polymer precursors to which a hydrophobic group comprising methyl has been added.

With regard to Claims 23 – 24, the coating disclosed by Chiao is utilized to protect the parts of an automobile (column 1, lines 15 – 18) and Chiao therefore discloses an article of manufacture, comprising a window, having the film disposed on the surface.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 16 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Singh et al (WO 00/78540).

Chiao disclose a film as discussed above. With regard to Claims 16 – 17, Chiao fails to disclose a film which has a permeability to oxygen less than 1 $cc/m^2/day$ and a film which has a permeability to water vapor of less than $1g/m^2/day$. However, Singh et al teach that the permeability of oxygen and water vapor (page 64, lines 16 – 17) is dependent on the amount of silicate (usually small amounts of the silicate are required to achieve good high gas barrier properties; page 64, lines 25 – 29).

Therefore, one of ordinary skill in the art would have recognized the utility of varying the amount of silicate to obtain the desired permeabilities. Therefore, the permeabilities would be readily determined by through routine optimization of the amount of silicate by one having ordinary skill in the art depending on the desired use of the end product as taught by Singh et al.

It therefore would be obvious for one of ordinary skill in the art to vary the amount of silicate Chiao in order to obtain the desired permeabilities, since the permeabilities would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Singh et al.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Fibiger et al (U.S. Patent No. 6,818,163 B1).

Chiao discloses a film comprising a nanocomposite laminate comprising silicate as discussed above. Chiao fails to disclose a laminate which is substantially transparent.

Fibiger et al teach a nanocomposite (films where the layers are 100 nanometers thick; column 6, lines 16 – 19) comprising silicate (column 4, lines 10 – 11) which is substantially transparent (column 6, lines 29 – 34) for the purpose of obtaining a film that allows the passage of ultraviolet light (the film is ultraviolet transparent; column 6, lines 29 – 34). One of ordinary skill in the art would therefore have recognized the advantage of providing for the transparency of Fibiger in Chiao, which is a nanocomposite, depending on the desired passage of light of the end product.

It therefore would be obvious for one of ordinary skill in the art to provide for transparency in Chiao in order to obtaining a film that allows the passage of ultraviolet light as taught by Fibiger et al.

9. Claims 18 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Ogawa et al (U. S. Patent No. 5,372,888).

Chiao disclose a film comprising barrier properties, as discussed above. With regard to Claims 18 – 19, Chiao fail to disclose a superhydrophobic layer comprising fluoroalkylsilane.

Ogawa et al teach the coating of a polymer surface (column 4, lines 23 – 27) with a fluoroalkylsilane layer (alkyl fluoride – containing chlorosilane layer), therefore a superhydrophobic layer, for the purpose of obtaining a layer that is anti – contaminating (column 3, lines 55 – 59). One of ordinary skill in the art would therefore recognize the advantage of providing for the layer of Ogawa et al in Chiao, which is a polymer and therefore comprises a polymer surface, depending on the desired anti – contamination properties of the end product.

It therefore would have been obvious for one of ordinary skill in the art to have provided for a superhydrophobic layer comprising fluoroalkylsilane in Chiao in order to obtain a layer that is anti – contaminating as taught by Ogawa et al.

10. Claims 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Brinker et al (U.S. Patent No. 6,264,741 B1).

Chiao discloses barrier film that is a multilayer nanocomposite as discussed above. The film comprises a surfactant (page 33, lines 19 – 20). Chiao fail to disclose a surfactant comprising a Gemini surfactant and layers in the form of tubules.

Brinker et al teach the use of a Gemini surfactant (column 4, lines 45 – 46) and tubules (column 8, line 6) in a nanocomposite (column 3, lines 56 – 57) for the purpose of obtaining a nanocomposite having high capacitance (column 3, lines 51 – 55). One of ordinary skill in the art would therefore recognize the advantage of providing for the Gemini surfactant and tubules of

Brinker et al in Chiao, which is a nanocomposite, depending on the desired capacitance of the end product.

It therefore would have been obvious for one of ordinary skill in the art to provide for a Gemini surfactant and tubules in Chiao in order to obtain a surface having high capacitance as taught by Brinker et al.

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Singh et al (U.S. Patent No. 6,057,035).

Chiao discloses a barrier film comprising a nanocomposite as discussed above. Chiao fails to disclose a barrier film that presents a long and tortuous path.

Singh et al teach a barrier film (column 5, lines 30 – 34) comprising a nanocomposite (nanoscale inorganic phase; column 5, lines 23 –26) that presents a long and tortuous path (tortuous path; column 5, lines 13 – 15) for the purpose of obtaining a film having low permeability (column 5, lines 15 – 18). One of ordinary skill in the art would therefore have recognized the advantage of providing for the long and tortuous path of Singh et al in Chiao, which comprises a barrier film comprising a nanocomposite, depending on the desired permeability of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a barrier film that presents a long and tortuous path in Chiao in order to obtain a film having low permeability as taught by Singh et al.

ANSWERS TO APPLICANT'S ARGUMENTS

12. Applicant's arguments regarding the 35 U.S.C. 102(b) rejection of Claims 12 – 14, 20 – 21, 23 – 25 and 27 – 29 as being anticipated by Chiao (U.S. Patent No. 6,472,467 B1), 35 U.S.C. 103(a) rejection of Claims 16 – 17 as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Singh et al (WO 00/78540), 35 U.S.C. 103(a) rejection of Claim 15 as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Fibiger et al (U.S. Patent No. 6,818,163 B1), 35 U.S.C. 103(a) rejection of Claims 18 – 19 as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Ogawa et al (U. S. Patent No. 5,372,888), 35 U.S.C. 103(a) rejection of Claims 22 and 26 as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Brinker et al (U.S. Patent No. 6,264,741 B1) and 35 U.S.C. 103(a) rejection of Claim 30 as being unpatentable over Chiao (U.S. Patent No. 6,472,467 B1) in view of Singh et al (U.S. Patent No. 6,057,035) of record in the previous Action, have been carefully considered but have not been found to be persuasive for the reasons set forth below.

Applicant argues, on page 6 of the arguments dated October 26, 2005, that although the layers of Chiao et al comprise organic and inorganic material, the covalent bonding of the claimed invention is between organic and inorganic materials, as disclosed in the specification . However, as stated on page 3 of the previous Action, each layer of Chiao et al is an organic and inorganic material, and covalent bonding therefore occurs between inorganic and organic layers.

Applicant also argues, on page 7 that Chiao et al do not disclose a nanolaminate.

However, as stated on page 3 of the previous Action, Chiao et al clearly disclose a film having multiple layers, therefore a laminate, and inorganic particles of nanometer size within the laminate; the laminate is therefore a nanolaminate.

Applicant also argues on page 7 that Chiao et al do not disclose an organic component that covalently bonds with an inorganic component; any personal knowledge or inherency to the contrary, Applicant argues, should be included in an affadavit.

However, as stated above, each layer of Chiao et al is an organic and inorganic material, and is crosslinked; covalent bonding therefore occurs between inorganic and organic layers.

Applicant also argues, on page 10, that a drawing 'A' submitted by Applicant is a representation of Chiao et al and drawing 'B' submitted by Applicant is Applicant's claimed invention; the drawings show, Applicant argues, that Chiao et al does not disclose discrete layers.

However, as stated on page 4 of the previous Action, the drawing submitted by Applicant is not shown in Chiao et al; furthermore, as stated above, Chiao et al clearly disclose a film having multiple layers; the layers are therefore united, and the laminate therefore has discrete layers.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A Patterson whose telephone number is 571-272-1497. The examiner can normally be reached on Mon - Fri 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marc Patterson 11/14/05

Marc A. Patterson, PhD.
Examiner
Art Unit 1772